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☐ 1: Biochim Biophys Acta 1998 Mar 6;1370(1):138-50

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Method of purification affects some interfacial properties of pulmonary surfactant proteins B and C and their mixtures with dipalmitoylphosphatidylcholine.**Taneva SG, Stewart J, Taylor L, Keough KM.**

Department of Biochemistry, Memorial University of Newfoundland, St. John's, Newfoundland, A1B 3X9, Canada.

Two methods were employed for preparation of lipid extracts from porcine lung surfactant. Pulmonary surfactant proteins SP-B and SP-C were isolated from the extracts using gel-exclusion chromatography on LH-60 with chloroform:methanol acidified with hydrochloric acid. Monolayers of pure SP-B or SP-C isolated from butanol lipid extracts spread at the air-water interface showed larger molecular areas than those determined in films of SP-B or SP-C isolated from chloroform surfactant extracts. Aqueous dispersions of dipalmitoylphosphatidylcholine (DPPC) supplemented with 2.5 and 5.0 wt% of SP-B or SP-C obtained from butanol extracts adsorbed faster to the air-water interface than their counterparts reconstituted with proteins isolated from chloroform extracts. Surface pressure-area characteristics of spread monolayers of DPPC plus SP-B or SP-C did not depend on the method of isolation of the proteins. The diagrams of the mean molecular areas vs. composition for the monolayers of DPPC plus SP-B or SP-C showed positive deviations from the additivity rule, independently of the procedure used for preparation of lipid extract surfactant. Matrix-assisted laser desorption/ionization spectrometry of the proteins isolated from different extraction solvents was consistent with some differences in the chemical compositions of SP-Bs. Butylation of SP-B during extraction of surfactant pellet with butanol may account for the differences observed in the molecular masses of SP-Bs isolated by the two different extraction protocols. The study suggests that the method of purification of SP-B and SP-C may modify their ability to enhance the adsorption rates of DPPC/protein mixtures, and this may be relevant to the formulation of protein-supplemented lipids for exogenous treatment of pulmonary surfactant insufficiency. Copyright 1998 Elsevier Science B.V.

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